WF-notes

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Field pattern on the window between WR90 waveguide

A dielectric window in WR90 has been simulated for its' field pattern. The structure is shown in figure 1. Here the aperture of the window is half of the cross section of WR90 waveguide. The thickness of the window is 1mm. The pattern of the electric field on the aperture of the window is given in figure 2. The S parameter of this structure is given in figure 3.
As shown in figure 2, the field pattern is different from pure TE10 mode due to the existence of higher order modes in the region of discontinuity. Because there is no impedance matching mechanism applied, the S11 is big and S21 is small as shown in figure 3.
The simulation is done by using Microwave studio.

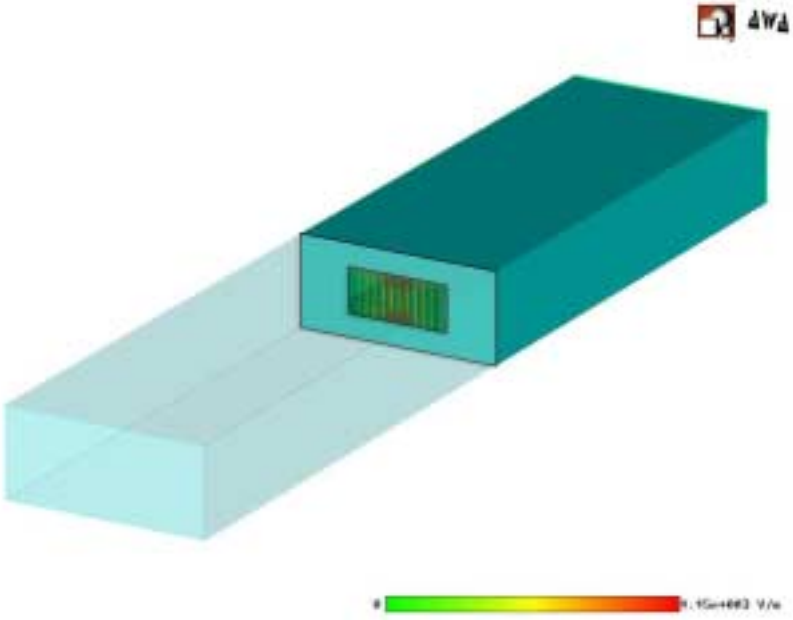

Figure 1. Structure of the dielectric window in WR90 waveguide

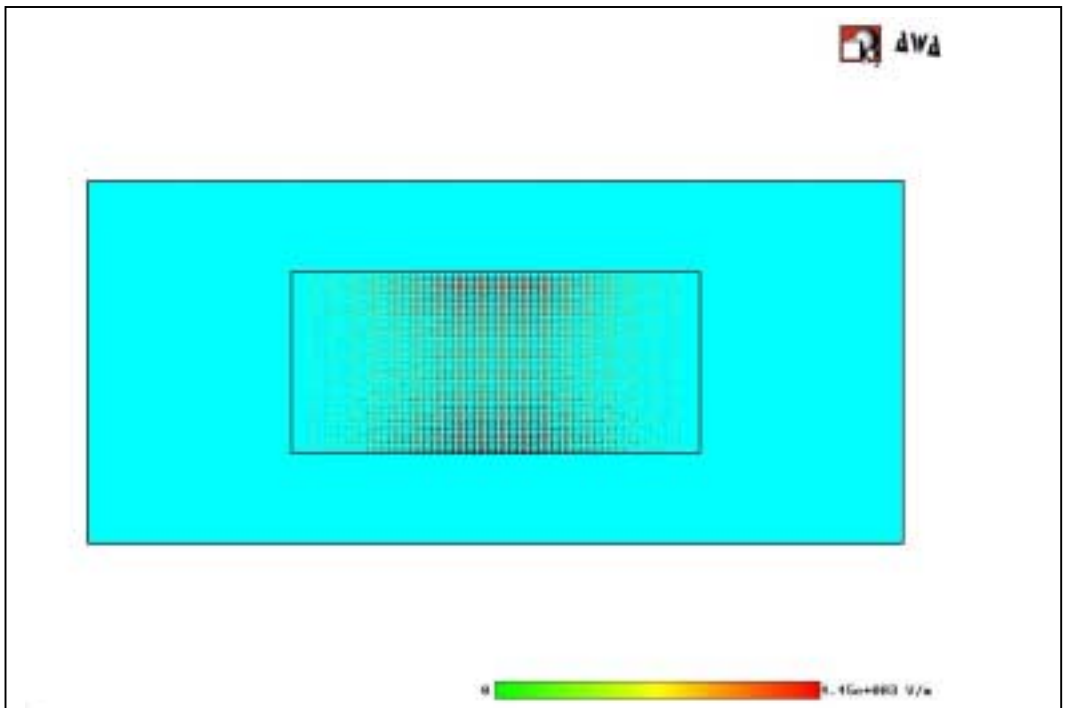

Figure 2. Field pattern on the window.

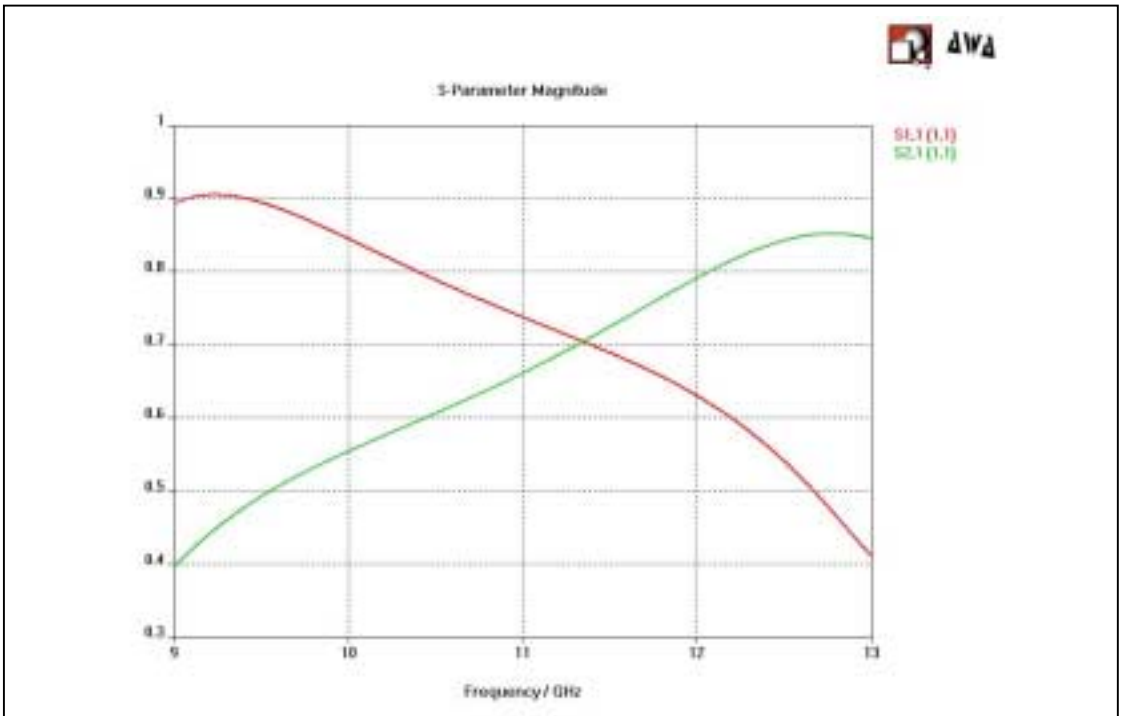

Figure 3. S parameter of the window.